IN THE CLAIMS:

Claims 1 – 129 are cancelled.
Claims 130 - 258 are new.

130. (New) A cooling system for cooling heat-generating components in an electronic system and having a heat transfer unit comprising:

a housing with at least one surface partially or fully open for coupling to one or more heat-generating components and forming a cavity there with; and

means for transporting a coolant through the cavity, across and in direct contact with the heat-generating components, for removing heat from the heat-generating component to the coolant.

131. (New) The cooling system as set forth in claim 130 wherein the open surface of the housing is formed as a receptacle for mating with a heat-generating component and forming the cavity there with.

132. (New) The cooling system as set forth in claim 130 wherein a pump is disposed in the housing for circulating coolant through the cavity.

133. (New) The cooling system as set forth in claim 130 wherein the cooling system further comprises:

a heat exchange unit for receiving coolant from the heat transfer unit heated by the transfer of heat from the heat generating components to the coolant, the heat exchange unit dissipating heat from the heated coolant and creating cooled coolant; and

means for transporting the heated coolant to the heat exchange unit from the heat transfer unit and the cooled coolant from the heat exchange unit to the heat transfer unit.

134. (New) The cooling system as set forth in claim 130 wherein the cooling system further comprises:

an inlet to the housing for receiving coolant for transport through the cavity and an outlet from the housing for the coolant heated by the transfer of heat from the heat-generating component to the coolant, the outlet being disposed above the inlet for enhancing convective flow of the coolant.

135. (New) An data processing system having the cooling system of claim 130.

136. (New) An telecommunications system having the cooling system of claim 130.

137. (New) An optical device having the cooling system of claim 130.

138. (New) A system having one or more processors and having the cooling system of claim 130.

139. (New) A method for cooling heat-generating components in an electronic system having one or more heat transfer units having a housing and a heat exchange unit comprising the steps of:

forming a cavity by coupling the housing of at least one of the heat transfer units to at least one surface of one or more heat-generating components, the housing having at least one surface partially or fully open to the heat-generating components;

transporting a coolant through the cavity, across and in direct contact with the heat-generating components;

removing heat from the heat-generating components by transferring the heat from the heat-generating components to the coolant;

transporting the heated coolant from the heat transfer unit to the heat exchange unit;

cooling the heated coolant in the heat exchange unit; and

transporting cooled coolant from the heat exchange unit to the heat transfer unit.

140. (New) The method as set forth in claim 139 wherein the housing has an inlet for receiving coolant and an outlet for receiving coolant heated by the transfer of heat from the heat-generating components to the coolant, the method further comprising the step of:

positioning the inlet below the outlet to enhance convective flow of the coolant.

141. (New) A cooling system for cooling heat-generating components in an electronic system comprising;

N heat transfer units for removing heat from heat generating components;

N-1, N or N+1 groups of one or more heat-generating components interleaved with the N heat transfer units such that a first surface of each group of heat-generating components is thermally coupled to a heat transfer unit and a second surface of N-1 of each such group of heat-generating components is thermally coupled to a different heat transfer unit;

means for transporting a coolant through each heat transfer unit for removing heat from the heat-generating components by transferring heat from the surfaces of each group of heat-generating components to the coolant flowing through the heat transfer thermally coupled to the surfaces; and

wherein N is an integer greater than 1.

142. (New) The cooling system as set forth in claim 141 wherein one or more of the heat transfer units is comprised of a housing with at least one surface partially or fully open for coupling to one or more heat-generating components and forming a cavity there with and wherein the coolant transported through the cavity flows across and in direct contact with the heat-generating components.

143. (New) The cooling system as set forth in claim 141 wherein the cooling system further comprises:

a heat exchange unit for receiving coolant from the heat transfer units heated by the transfer of heat from the heat-generating components to the coolant, the heat exchange unit dissipating heat from the heated coolant and creating cooled coolant; and

means for transporting the heated coolant to the heat exchange unit from the heat transfer units and the cooled coolant from the heat exchange unit to the heat transfer units.

144. (New) The cooling system as set forth in claim 141 wherein one or more of the heat transfer units has an inlet for receiving coolant for transport through the heat transfer unit and an outlet from the heat transfer unit for the coolant heated by the transfer of heat from the heat-generating components to the coolant, the outlet being disposed above the inlet for enhancing convective flow of the coolant.

145. (New) A data processing system having the cooling system of claim 141.

146. (New) A telecommunications system having the cooling system of claim 141.

147. (New) An optical device having the cooling system of claim 141.

148. (New) A system having one or more processors and having the cooling system of claim 141.

149. (New) A method of cooling heat-generating components in an electronic system comprising the steps of:

interleaving N heat transfer units with N-1, N or N + 1 groups of one or more heat-generating components such that a first surface of each group of heat-generating components is thermally coupled to a heat transfer unit and a second surface of N-1 of each such groups of heat-generating components is thermally coupled to a different heat transfer unit;

transporting coolant through each heat transfer unit;

removing heat from the heat-generating component by transferring heat from the first surface of each group of heat-generating components to the coolant flowing through the heat transfer unit thermally coupled thereto and transferring heat from a second surface of N-1 groups of such

heat-generating components to the coolant flowing through a different heat transfer unit thermally coupled there to;

transporting heated coolant from the heat transfer units to a heat exchange unit;

cooling the heated coolant in the heat exchange unit; and

transporting cooled coolant from the heat exchange unit to the heat transfer units.

150. (New) The method as set forth in claim 149 wherein one or more heat transfer units have an inlet for receiving coolant and an outlet for receiving coolant heated by the transfer of heat from the heat-generating components to the coolant, the method further comprising the step of:

positioning the inlets below the outlets to enhance convective flow of the coolant.

151. (New) The method of claim 149 wherein one or more heat transfer units is comprised of a housing having one or more surfaces partially or fully open for coupling to one or more surfaces of the heat-generating components and forming cavities there with and wherein the coolant transported through the cavities flows across and in direct contact with the surfaces of the heat-generating component, the method further comprising the step of:

removing heat from one or more heat-generating components into the coolant by direct contact of the coolant with the heat generating components.

152. (New) A cooling system for cooling heat-generating components in an electronic system and having a heat transfer unit comprising;

a housing comprising one or more cavities thermally coupled to a heat-generating component on multiple sides of the heat-generating component; and

means for transporting a coolant through the cavities such that heat from the heat-generating component is removed by transferring heat to the coolant from each side of the heat-generating component thermally coupled to a cavity.

153. (New) The cooling system as set forth in claim 152 wherein the housing has one or more surfaces partially or fully open for coupling to one or more surfaces of the heat-generating component and forming cavities there with and wherein the coolant transported through the cavities flows across and in direct contact with the surfaces of the heat-generating component.

154. (New) The cooling system as set forth in claim 152 wherein the cooling system further comprises:

a heat exchange unit for receiving coolant from the heat transfer unit heated by the transfer of heat from the surfaces of the heat-generating component to the coolant, the heat exchange unit dissipating heat from the heated coolant and creating cooled coolant; and

means for transporting the heated coolant to the heat exchange unit from the heat transfer unit and the cooled coolant from the heat exchange unit to the heat transfer unit.

155. (New) The cooling system as set forth in claim 152 wherein the heat transfer unit has at least one inlet for receiving coolant for transport through the cavities and at least one outlet from the heat transfer unit for the coolant heated by the transfer of heat from the heat-generating component to the coolant, the outlet being disposed above the inlet for enhancing convective flow of the coolant.

156. (New) A data processing system having the cooling system of claim 152.

157. (New) A telecommunications system having the cooling system of claim 152.

158. (New) An optical device having the cooling system of claim 152.

159. (New) A system having one or more processors and having the cooling system of claim 152.

160. (New) A method of cooling heat-generating components in an electronic system comprising the steps of:

thermally coupling the housing of a heat transfer unit having one or more cavities to multiple sides of a heat-generating component;

transporting a coolant through the cavities;

removing heat from the heat-generating component by transferring heat from the heat-generating component to the coolant from each side of the heat-generating component thermally coupled to a cavity;

transporting heated coolant from the heat transfer unit to a heat exchange unit;

cooling the heated coolant in the heat exchange unit; and

transporting cooled coolant from the heat exchange unit to the heat transfer unit.

161. (New) The method as set forth in claim 160 wherein the heat transfer unit has one or more inlets for receiving coolant and one or more outlets for receiving coolant heated by the transfer of heat from the heat-generating components to the coolant, the method further comprising the step of:

positioning the inlets below the outlets to enhance convective flow of the coolant.

162. (New) The method of claim 160 wherein one or more surfaces of the housing is partially or fully open for coupling to one or more surfaces of the heat-generating component and forming cavities there with and wherein the coolant transported through the cavities flows across and in direct contact with the surfaces of the heat-generating component, the method further comprising the step of:

removing heat from one or more heat-generating components into the coolant by direct contact of the coolant with the heat generating components.

163. (New) A cooling system for one or more heat-generating components in an electronic system having a heat transfer unit comprising:

a printed circuit board coupled to the heat-generating components;

a heat conducting material disposed within the printed circuit board for receiving heat from the heat-generating components;

a coolant pathway thermally coupled to the heat conducting material for removing heat from the heat-generating components by transferring heat from the heat conducting material to a coolant; and

means for transporting a coolant through the coolant pathway.

164. (New) A cooling system as set forth in claim 163 wherein the heat conducting material is disposed in the printed circuit board in the form of a cavity such that the cavity becomes part of the coolant pathway for coolant to flow through.

165. (New) The cooling system as set forth in claim 163 wherein the cooling system further comprises:

a heat exchange unit for receiving coolant from the heat transfer unit heated by the transfer of heat from the heat-generating components to the coolant, the heat exchange unit dissipating heat from the heated coolant and creating cooled coolant; and

means for transporting the heated coolant to the heat exchange unit from the heat transfer unit and the cooled coolant from the heat exchange unit to the heat transfer unit.

166. (New) The cooling system as set forth in claim 163 wherein the heat transfer unit has an inlet for receiving coolant and an outlet for the coolant heated by the transfer of heat from the heat-generating components to the coolant, the outlet being disposed above the inlet for enhancing convective flow of the coolant.

167. (New) A data processing system having the cooling system of claim 163.

168. (New) A telecommunications system having the cooling system of claim 163.

169. (New) An optical device having the cooling system of claim 163.

170. (New) A system having one or more processors and having the cooling system of claim 163.

171. (New) A method of cooling heat-generating components in an electronic system having a heat transfer unit comprised of printed circuit board coupled to the heat-generating components and a heat conducting material disposed within the printed circuit board and a coolant pathway coupled to the heat conducting material, the method comprising the steps of:

transferring heat from the heat-generating components to the heat conducting material;

transferring heat from the heat conducting material to a coolant flowing through the liquid pathway;

transporting heated coolant from the heat transfer unit to a heat exchange unit;

cooling the heated coolant in the heat exchange unit; and

transporting cooled coolant from the heat exchange unit to the heat transfer unit.

172. (New) The method as set forth in claim 171 wherein the heat transfer unit has an inlet for receiving coolant and an outlet for receiving coolant heated by the transfer of heat from the heat-generating components to the coolant, the method further comprising the step of:

positioning the inlet below the outlet to enhance convective flow of the coolant.

173. (New) The method of claim 171 the system further including a heat exchange unit for receiving heated coolant from the heat transfer unit and cooling the heated coolant and means for transporting the heated liquid from the heat transfer unit to an inlet of the heat exchange unit and cooled coolant from an outlet of the heat exchange unit to the heat transfer unit, the method further comprising the step of:

positioning the inlet above the outlet to enhance convective flow of the coolant.

174. (New) A cooling system for one or more heat-generating components in an electronic system comprising:

a plurality of heat transfer units thermally coupled to one or more heat-generating components for receiving heat from the heat-generating components and transferring heat to a coolant flowing there through;

a heat exchange unit for receiving heated coolant from the heat transfer units and cooling the coolant by dissipating heat there from;

means for transporting heated coolant from the transfer units to the heat exchange unit and for transporting cooled liquid from the heat exchange unit to the heat transfer units; and

wherein two or more of the heat transfer units are connected in parallel for receiving the cooled liquid from the heat exchange unit and for transferring heated coolant to the heat exchange unit.

175. (New) The cooling system as set forth in claim 174 wherein one or more of the heat transfer units is comprised of a housing with at least one surface partially or fully open for coupling to one or more heat-generating components and forming a cavity there with and wherein the coolant transported through the cavity flows across and in direct contact with the heat-generating components.

176. (New) The cooling system as set forth in claim 174 wherein at least one of the heat transfer units has an inlet for receiving coolant from the heat exchange unit and an outlet from the heat transfer unit for the coolant heated by the transfer of heat from the heat-generating components to the coolant, the outlet being disposed above the inlet for enhancing convective flow of the coolant.

177. (New) The cooling system as set forth in claim 174 wherein the heat exchange unit has an inlet for receiving heated coolant from the heat transfer units and an outlet for transporting cooled coolant to the heat transfer units, the outlet being disposed below the inlet for enhancing convective flow of the coolant.

178. (New) A data processing system having the cooling system of claim 174.

179. (New) A telecommunications system having the cooling system of claim 174.

180. (New) An optical device having the cooling system of claim 174.

181. (New) A system having one or more processors and having the cooling system of claim 174.

182. (New) A method of cooling heat-generating components in an electronic system having a a heat exchange unit and a plurality of heat transfer units connected in parallel and each heat transfer unit thermally coupled to one or more heat-generating components, the method comprising the steps of:

receiving heated coolant from the heat transfer units at the heat exchange unit;

cooling the heating coolant in the heat exchange unit by dissipating heat there from;

transporting the cooled coolant from the heat exchange unit to the heat transfer units; and

removing heat from the heat-generating components by transferring heat from the heat-generating components to the cooled coolant flowing through the heat transfer units and creating heated coolant for transfer to the heat exchange unit.

183. (New) The method as set forth in claim 182 wherein at least one heat transfer unit has an inlet for receiving coolant and an outlet for receiving coolant heated by the transfer of heat from the heat-generating components to the coolant, the method further comprising the step of:

positioning the inlet below the outlet to enhance convective flow of the coolant.

184. (New) The method of claim 182 wherein the heat exchange unit further comprises an inlet for receiving heated coolant from the heat generating components and an outlet for transporting cooled coolant, the method further comprising the step of:

positioning the inlet above the outlet for enhancing convective circulation of the coolant.

185. (New) The method of claim 182 wherein one or more heat transfer units is comprised of a housing having one or more surfaces partially or fully open for coupling to one or more surfaces of the heat-generating components and forming cavities there with and wherein the coolant transported through the cavities flows across and in direct contact with the surfaces of the heat-generating component, the method further comprising the step of:

removing heat from one or more heat generating components into the coolant by direct contact of the coolant with the heat generating components.

186. (New) A cooling system for cooling heat-generating components in an electronic system comprising:

a heat exchange unit for receiving heated coolant and generating cooled coolant;

one or more heat transfer units coupled to the heat-generating components for receiving cooled coolant from the heat exchange unit and generating heated coolant for transportation to the heat exchange unit; and

means for transporting cooled coolant from the heat exchange unit to the heat transfer units and for transporting heated coolant from the heat transfer units to the heat exchange unit; and

wherein the cooling system has no component acting as a reservoir while the cooling system is in operation.

187. (New) The cooling system of claim 186 wherein one or more heat transfer units have an inlet for receiving cooled coolant from the heat exchange unit and an outlet for receiving heated coolant for transporting to the heat exchange unit, wherein the inlet is disposed below the outlet for enhancing convective circulation of the coolant.

188. (New) The cooling system of claim 186 wherein the heat exchange unit has an inlet for receiving heated coolant from the heat transfer units and an outlet for receiving cooled coolant from the heat exchange unit for transporting to the heat transfer units, wherein the outlet is disposed below the inlet for enhancing convective circulation of the coolant.

189. (New) The cooling system as set forth in claim 186 wherein one or more heat transfer units is comprised of a housing having one or more surfaces partially or fully open for coupling to one or more surfaces one or more heat-generating components and forming cavities there with and wherein the coolant transported through the cavities flows across and in direct contact with the surfaces of the heat-generating component.

190. (New) A data processing system having the cooling system of claim 186.

191. (New) A telecommunications system having the cooling system of claim 186.

192. (New) An optical device having the cooling system of claim 186.

193. (New) A system having one or more processors and having the cooling system of claim 186.

194. (New) A method of cooling heat-generating components in an electronic system, the method comprising the steps of:

receiving heated coolant from one or more heat transfer units at a heat exchange unit;

cooling the coolant within the heat exchange unit for transportation to the heat transfer units;

receiving cooled coolant from the heat exchange unit at the heat transfer units;

heating the coolant within the heat transfer units by transferring heat from the heat-generating components to the coolant for transportation to the heat exchange unit; and

wherein all of the above steps are performed in the cooling system having no component acting as a reservoir while the cooling system is in operation.

195. (New) The method of claim 194 wherein one or more heat transfer units have an inlet for receiving cooled coolant from the heat exchange unit and an outlet for receiving heated coolant for transporting to the heat exchange unit, the method further comprising the step of:

positioning the inlet below the outlet, for enhancing convective circulation of the coolant.

196. (New) The method of claim 194 wherein the heat exchange unit has an inlet for receiving heated coolant from the heat transfer units and an outlet for transporting cooled coolant to the heat transfer units, the method further comprising the step of:

positioning the inlet above the outlet, for enhancing convective circulation of the coolant.

197. (New) The method of claim 194 wherein one or more heat transfer units is comprised of a housing having one or more surfaces partially or fully open for coupling to one or more surfaces of one or more heat-generating components and forming cavities there with and wherein the coolant transported through the cavities flows across and in direct contact with the surfaces of the heat-generating component, the method further comprising the step of:

removing heat from one or more heat-generating components into the coolant by direct contact of the coolant with the heat generating components.

198. (New) A cooling system for cooling heat-generating components in an electronic system having a heat exchange unit, the heat exchange unit comprising:

an input cavity for receiving heated coolant and distributing the heated coolant to a dissipater;

a dissipater for receiving the heated coolant and cooling the coolant;

an output cavity for receiving the cooled from coolant the dissipater and transporting the cooled to the coolant; and

wherein the cooling system has no component acting as a reservoir while the cooling system is in operation.

199. (New) The cooling system as set forth in claim 198 wherein the input cavity is disposed above the output cavity for enhancing convective circulation of the coolant.

200. (New) The cooling system as set forth in claim 198 wherein a pump is disposed in the heat exchanger.

201. (New) The cooling system as set forth in claim 200 wherein a pump is a self-priming pump.

202. (New) The cooling system as set forth in claim 200 wherein a pump is disposed in the output cavity.

203. (New) The cooling system as set forth in claim 202 wherein the pump includes an impeller disposed horizontally at the very bottom of the output cavity.

204. (New) The cooling system as set forth in claim 200 wherein the pump includes an impeller disposed horizontally at the very bottom of the heat exchange unit.

205. (New) The cooling system as set forth in claim 203 wherein the impeller includes one or more blades with slanted surfaces inverted so as to improve the flow of coolant out of the heat exchange unit at the bottom there of.

206. (New) The cooling system as set forth in claim 200 wherein the pump includes an impeller, the heat exchanger further comprising:

a motor; and

a shaft coupled to the motor and to the impeller for operating the pump.

207. (New) The cooling system as set forth in claim 206 wherein no seal is required for the pump.

208. (New) The cooling system as set forth in claim 198 wherein the dissipater further comprises a plurality of coolant pathways for transporting the heated coolant through the dissipater.

209. (New) The cooling system as set forth in claim 208 wherein one or more of the coolant pathways includes means for creating non-laminar flow of the coolant for enhancing the transfer of heat from the coolant to the dissipater.

210. (New) A data processing system having the cooling system of claim 198.

211. (New) A telecommunications system having the cooling system of claim 198.

212. (New) An optical device having the cooling system of claim 198.

213. (New) A system having one or more processors and having the cooling system of claim 198.

214. (New) A method of cooling heat-generating components in an electronic system and having a heat exchange unit, the method comprising the steps of:

receiving heated coolant at an input cavity of the heat exchange unit and distributing the heated coolant to a dissipater;

cooling the coolant in the dissipater;

receiving the cooled coolant from the dissipater at an output cavity for directing the cooled coolant to the system; and

wherein all of the above steps are performed in the cooling system having no component acting reservoir while the cooling system is in operation.

215. (New) The method of claim 214 further comprising the step of:

positioning input cavity above output cavity for enhancing convective circulation of the coolant.

216. (New) The method of claim 214 wherein one or more heat transfer units for cooling the heat-generating components is included and at least one the heat transfer units is comprised of a housing having one or more surfaces partially or fully open for coupling to one or more surfaces of heat-generating components and forming cavities there with and wherein the coolant transported through the cavities flows across and in direct contact with the surfaces of the heat-generating component, the method further comprising the step of:

removing heat from one or more heat-generating components into the coolant by direct contact of the coolant with the heat-generating components.

217. (New) The method of claim 214 wherein the cooling system further comprises one or more heat transfer units, each heat transfer unit thermally coupled to one or more heat-generating components, the heat transfer unit receiving cooled coolant from the heat exchange unit, and removing heat from the heat-generating components by transferring heat to the coolant and creating heated coolant for transporting to the heat exchange unit, and wherein one or more of the heat transfer units further comprises an inlet for receiving cooled coolant from the heat exchange unit and an outlet for receiving heated coolant for transfer to the heat exchange unit, the method further comprising the step of:

positioning the inlet below the outlet, for enhancing convective circulation of the coolant.

218. (New) A cooling system for cooling heat-generating components in an electronic system having a heat exchange unit, the heat exchange unit comprising:

a dissipater for receiving heated coolant from the heat-generating components and cooling the heated coolant by dissipating heat there from;

a cavity coupled to the dissipater;

a pump disposed in the cavity;

an air flow device;

a connecting means coupled to the air flow device and the pump for operating both the air flow device and the pump; and

means for transporting heated coolant to the heat exchange unit and for transporting cooled coolant from the heat exchange unit.

219. (New) The cooling system as set forth in claim 218 further comprising:

an inlet for receiving heated coolant at the heat exchange unit;

an outlet for receiving cooled coolant from the heat exchange unit; and

wherein the inlet is disposed above the outlet for enhancing convective circulation of the coolant.

220. (New) The cooling system as set forth in claim 218 wherein the cavity is a reservoir.

221. (New) A data processing system having the cooling system of claim 218.

222. (New) A telecommunications system having the cooling system of claim 218.

223. (New) An optical device having the cooling system of claim 218.

224. (New) A system having one or more processors and having the cooling system of claim 218.

225. (New) A method of cooling heat-generating components in an electronic system having a heat exchange unit including a dissipater, a cavity, a pump disposed in the cavity and an air flow device, the method comprising the step of:

operating both the pump and the airflow device by a single connecting means coupled to both.

226. (New) The method as set forth in claim 225 further comprising the steps of:

circulating a coolant through the system in response to operation of the pump by the connecting means; and

dissipating heat absorbed into the coolant in the dissipater in response to the circulation of the coolant and further dissipating such heat by operation of the air flow device by the connecting means.

227. (New) The method of claim 225 wherein the dissipater further comprises an inlet for receiving heated coolant from the heat-generating components and an outlet for receiving cooled coolant, the method further comprising the step of:

positioning the inlet above the outlet, for enhancing convective circulation of the coolant.

228. (New) The method of claim 225 wherein the cooling system further comprises one or more heat transfer units, each heat transfer unit thermally coupled to one or more heat-generating components, the heat transfer unit receiving cooled coolant from the dissipater, and removing heat from the heat-generating components by transferring heat to the coolant and creating heated coolant for transporting to the dissipater, and wherein one or more of the heat transfer units further comprises an inlet for receiving cooled coolant from the dissipater and an outlet for receiving heated coolant for transfer to the dissipater, the method further comprising the step of:

positioning the inlet below the outlet, for enhancing convective circulation of the coolant.

229. (New) A cooling system for cooling heat-generating components in an electronic system and having a heat exchange unit, the heat exchange unit comprising:

a dissipater for receiving heated coolant from the heat-generating components and for cooling the heated coolant;

one or more coolant pathways through the heat dissipater for transporting the heated coolant through the dissipater; and

a plurality of fins extending from the exterior surface of the coolant pathways for absorbing heat from the heated coolant, dissipating the absorbed heat and transforming the heated coolant into cooled coolant; and

means for transporting the heated coolant to the heat exchange unit and for transporting cooled coolant from the heat exchange unit.

230. (New) The cooling system as set forth in claim 229 wherein the heat exchange unit further comprises a cavity and a pump disposed therein and coupled to dissipater for providing forced circulation of the coolant.

231. (New) The cooling system as set forth in claim 230 wherein the cavity is a reservoir.

232. (New) The cooling system as set forth in claim 229 wherein the heat exchange unit further comprises inlet for receiving heated coolant from the heat-generating components and an outlet for receiving cooled coolant and wherein the inlet is disposed above the outlet for enhancing convective circulation of the coolant.

233. (New) The cooling system as set forth in claim 229 wherein the cooling system further comprises one or more heat transfer units, each heat transfer unit thermally coupled to one or more heat-generating components, the heat transfer units receiving cooled coolant from the heat exchange unit, the heat transfer units removing heat from the heat-generating components by transferring heat to the coolant and creating heated coolant for transporting to the heat exchange unit, and wherein one or more of the heat transfer units further comprises:

an inlet for receiving cooled coolant from the heat exchange unit;

an outlet for receiving heated coolant for transfer to the heat exchange unit; and

wherein the inlet is disposed below the outlet, for enhancing convective circulation of the coolant.

234. (New) The cooling system as set forth in claim 229 wherein the cooling system further comprises one or more heat transfer units, each heat transfer unit thermally coupled to one or more heat-generating components, the heat transfer units receiving cooled coolant from the heat exchange unit, the heat transfer units removing heat from the heat-generating components by transferring heat to the coolant and creating heated coolant for transporting to the heat exchange unit, and wherein one or more of the heat transfer units further comprises:

a housing with at least one surface partially or fully open for coupling to one or more heat-generating components and forming a cavity there with and wherein the coolant transported through the cavity flows across and in direct contact with the heat-generating components.

235. (New) The cooling system as set forth in claim 229 wherein the dissipater is disposed within the housing of a portable electronic device to the inside wall of the portable device housing.

236. (New) A data processing system having the cooling system of claim 229.

237. (New) A telecommunications system having the cooling system of claim 229.

238. (New) An optical device having the cooling system of claim 229.

239. (New) A system having one or more processors and having the cooling system of claim 229.

240. (New) A portable electronic system having the cooling system of claim 229.

241. (New) A method of cooling heat-generating components in an electronic system having a heat exchange unit comprising a dissipater, one or more coolant pathways through the dissipater and a plurality of fins extending from the exterior surface of the coolant pathways; the method comprising the steps of:

receiving heated coolant from the heat-generating components at the heat exchanger;

transporting the heated coolant through the coolant pathways in the dissipater;

removing heat from the heated coolant by transferring heat from the coolant to the fins and creating cooled coolant;

dissipating heat from the fins; and

transporting the cooled coolant to the heat-generating components.

242. (New) The method of claim 241 wherein the heat exchange unit further comprises an inlet for receiving heated coolant from the heat-generating components and an outlet for receiving cooled coolant, the method further comprising the step of:

positioning the inlet above the outlet for enhancing convective circulation of the coolant.

243. (New) The method of claim 241 wherein the cooling system further comprises one or more heat transfer units, each heat transfer unit thermally coupled to one or more heat-generating components, the heat transfer unit receiving cooled coolant from the heat exchange unit, and removing heat from the heat-generating components by transferring heat to the coolant and creating heated coolant for transporting to the heat exchange unit, and wherein one or more of the heat transfer units further comprises an inlet for receiving cooled coolant from the heat exchange unit and an outlet for receiving heated coolant for transfer to the heat exchange unit, the method further comprising the step of:

positioning the inlet below the outlet, for enhancing convective circulation of the coolant.

244. A cooling system for cooling heat-generating components in an electronic system comprising:

a dissipater for cooling heated coolant received from the heat-generating components and for cooling the heated coolant;

a cavity coupled to the dissipater and having a pump disposed therein for creating forced circulation of the coolant;

an air flow device positioned between the cavity and the dissipater for enhancing the dissipation of heat from the coolant by directing air flow over or through both the cavity and the dissipater; and

coolant pathways for transporting heated coolant from the heat-generating components and cooled coolant to the heat-generating components.

245. (New) The cooling system as set forth in claim 244 wherein the cooling system is disposed within a the housing of the electronic system in manner to further direct the air flow over and through the cavity and the dissipater and out of the electronic system housing.

246. (New) The cooling system as set forth in claim 244 wherein the cavity is a reservoir.

247. (New) The cooling system as set forth in claim 244 wherein the dissipater further comprises inlet for receiving heated coolant from the heat-generating components and an outlet for receiving cooled coolant and wherein the inlet is disposed above the outlet for enhancing convective circulation of the coolant.

248. (New) The cooling system as set forth in claim 244 wherein the cooling system further comprises one or more heat transfer units, each heat transfer unit thermally coupled to one or more heat-generating components, the heat transfer units receiving cooled coolant from the dissipater, removing heat from the heat-generating components by transferring heat to the coolant and creating heated coolant for transporting to the dissipater, and wherein one or more of the heat transfer units further comprises:

an inlet for receiving cooled coolant from the dissipater;

an outlet for receiving heated coolant for transfer to the dissipater; and

wherein the inlet is disposed below the outlet for enhancing convective circulation of the coolant.

249. (New) The cooling system as set forth in claim 244 wherein the cooling system further comprises one or more heat transfer units, each heat transfer unit thermally coupled to one or heat-generating components, the heat transfer units receiving cooled coolant from the dissipater , removing heat from the heat-generating components by transferring heat to the coolant and creating heated coolant for transporting to the dissipater, and wherein one or more of the heat transfer units further comprises:

a housing with at least one surface partially or fully open for coupling to one or more heat-generating components and forming a cavity there with and wherein the coolant transported through the cavity flows across and in direct contact with the heat-generating components.

250. (New) A data processing system having the cooling system of claim 244.

251. (New) A telecommunications system having the cooling system of claim 244.

252. (New) An optical device having the cooling system of claim 244.

253. (New) A system having one or more processors and having the cooling system of claim 244.

254. (New) A method of cooling heat-generating components in an electronic system having a dissipater and a cavity coupled there to with a pump disposed in the cavity; the method comprising the steps of:

positioning an airflow device between the dissipater and the cavity such that air is directed over or through the cavity and the dissipater.

255. (New) The method of claim 254 further comprising the step of:

positioning the dissipater, cavity and air flow device within the electronic system such that the air flow is also directed out of the electronic system housing.

256. (New) The method of claim 254 further comprising the steps of:

receiving heated coolant from the heat-generating components at the dissipater;

cooling the coolant in the dissipater; and

transporting the cooled coolant to the heat-generating components.

257. (New) The method of claim 256 wherein the dissipater further comprises an inlet for receiving heated coolant from the heat-generating components and an outlet for receiving cooled coolant, the method further comprising the step of:

positioning the inlet above the outlet, for enhancing convective circulation of the coolant.

258. (New) The method of claim 256 wherein the cooling system further comprises one or more heat transfer units, each heat transfer unit thermally coupled to one or more heat-generating components, the heat transfer unit receiving cooled coolant from the dissipater, and removing heat from the heat-generating components by transferring heat to the coolant and creating heated coolant for transporting to the dissipater, and wherein one or more of the heat transfer units

further comprises an inlet for receiving cooled coolant from the dissipater and an outlet for receiving heated coolant for transfer to the dissipater, the method further comprising the step of:

positioning the inlet below the outlet, for enhancing convective circulation of the coolant.